at1121exam_practice EXAMPLE! DO NOT HAND IN FOR CREDIT (v8)

- If you are looking for a practice exam that you can hand in for credit:

https://chadworley.github.io/algtwo2026/u04/1121/at1121exam/at1121exam.html

Question 1

Simplify the radical expressions.

$\sqrt{44}$ $\sqrt{45}$ $\sqrt{8}$

$\sqrt{2 \cdot 2 \cdot 11}$ $\sqrt{3 \cdot 3 \cdot 5}$ $\sqrt{2 \cdot 2 \cdot 2}$

$2\sqrt{11}$ $3\sqrt{5}$ $2\sqrt{2}$

Question 2

Find all solutions to the equation below:

$$2(x-8)^2 - 7 = 43$$

First, add 7 to both sides.

$$2(x-8)^2 = 50$$

Then, divide both sides by 2.

$$(x-8)^2 = 25$$

Undo the squaring. Remember the plus-minus symbol.

$$x - 8 = \pm 5$$

Add 8 to both sides.

$$x = 8 \pm 5$$

So the two solutions are $x = 13$ and $x = 3$.

Question 3

By completing the square, find both solutions to the given equation. *You must show work for full credit!*

$$x^2 + 16x = -48$$

Take the linear coefficient, 16, halve it and square the result. You should get 64. Add this to both sides of the equation to complete the square.

$$x^2 + 16x + 64 = -48 + 64$$

$$x^2 + 16x + 64 = 16$$

Factor the perfect-square trinomial.

$$(x + 8)^2 = 16$$

$$x + 8 = \pm 4$$

$$x = -8 \pm 4$$

$$x = -4 \quad \text{or} \quad x = -12$$

Question 4

A quadratic polynomial function is shown below in standard form.

$$y = 3x^2 - 30x + 69$$

Express the function in **vertex form** and identify the **location** of the vertex.

From the first two terms, factor out 3 .

$$y = 3(x^2 - 10x) + 69$$

We want a perfect square. Halve -10 and square the result to get 25 . Add and subtract that value inside the parentheses.

$$y = 3(x^2 - 10x + 25 - 25) + 69$$

Factor the perfect-square trinomial.

$$y = 3((x - 5)^2 - 25) + 69$$

Distribute the 3.

$$y = 3(x - 5)^2 - 75 + 69$$

Combine the constants to get **vertex form**:

$$y = 3(x - 5)^2 - 6$$

The vertex is at point $(5, -6)$.